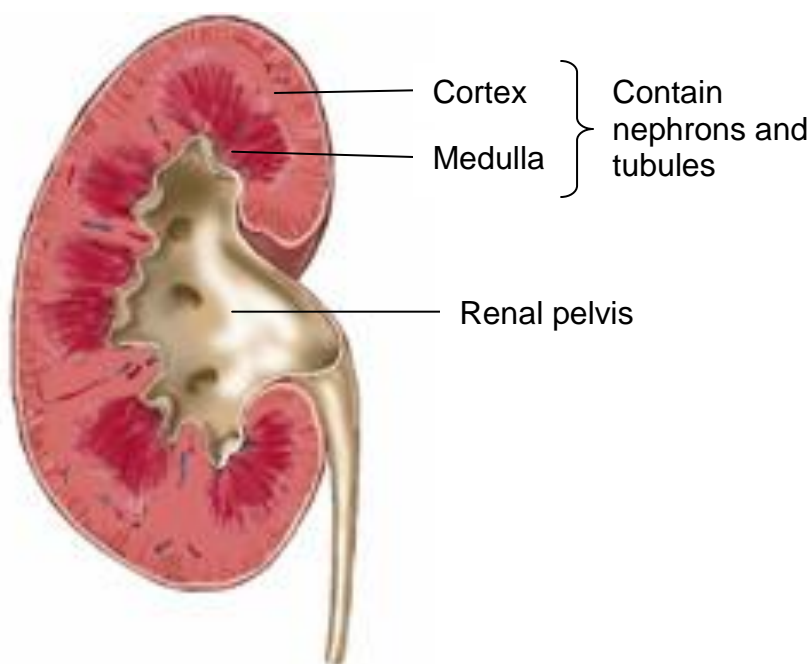




## Kidney Cancer

Kidney cancer accounts for less than 3% of all newly diagnosed cancer in Montana and the United States. The incidence in Montana is statistically significantly lower than that for the United States among men (16.3/100,000 and 18.6/100,000, respectively); the difference is not significant for women (8.8 per 100,000 and 9.5/100,000, respectively).<sup>1</sup>

Approximately 80% of kidney cancer is renal cell carcinoma (adenocarcinoma) of the tubules in the cortex and medulla of the kidney tissue.<sup>2</sup> Approximately 10% is transitional cell carcinoma of the renal pelvis and approximately 8% is transitional cell carcinoma of the ureters. The transitional cells lining the renal pelvis (where urine collects before passing into the bladder) and the ureters (which transmit urine to the bladder) are similar to the transitional cells lining the bladder and serve a similar function. Several layers of transitional epithelial cells line these structures and protect the deeper tissues from the caustic effects of urine and the damaging action of any toxins or carcinogens that may be present in the urine.



<sup>1</sup> Montana Central Tumor Registry, 2009; National Cancer Institute, [www.cancer.gov](http://www.cancer.gov)

<sup>2</sup> McLaughlin JK et al. 2006. Renal cancer. In D Schottenfeld and JF Fraumeni Jr, eds. *Cancer Epidemiology and Prevention*, 3<sup>rd</sup> ed. New York: Oxford University Press, pp. 1087-1100.

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Cancer of the transitional cells of the renal pelvis and ureters is similar to cancer of the transitional cells of the lining of the bladder (see Quarterly Surveillance Report of January, 2009: Bladder Cancer). This report focuses on renal cell carcinoma.

Smoking cigarettes doubles the risk of developing renal cell carcinoma.<sup>2</sup> Risk increases with duration and intensity of smoking, and risk decreases after smoking cessation. One third of renal cell carcinoma in men and one fifth in women is attributable to smoking.

Other documented risk factors for renal cell carcinoma are obesity, although the mechanism for this increased risk is unknown, and hypertension.<sup>2</sup> It is not clear if the risk associated with hypertension is physiological, related to the direct effects of elevated blood pressure on kidney tissues, or is mediated by antihypertensive medications.

Exposure to some heavy metals (arsenic, cadmium) and chemicals (polycyclic aromatic hydrocarbons [PAH], tetrachlorethylene, trichloroethylene) appears to be associated with slightly increased risk of both renal cell and transitional cell carcinomas of the kidney. The most common sources of exposure to these elements are cigarette smoke (arsenic, cadmium, PAH), vehicle exhaust and other burning fossil fuels (arsenic, PAH), and use as industrial cleaning agents and solvents (tetrachlorethylene and trichloroethylene). Most exposure to cleaning agents and solvents occurs in occupational settings.

A third of kidney cancers are diagnosed incidentally, in the course of evaluation for other medical conditions.<sup>3</sup> Consequently, many are diagnosed at a late stage. Treatment for renal cell carcinoma is only marginally effective and survival is generally poor.<sup>3</sup> Therefore, the most effective cancer control approach for kidney cancer is prevention, notably by avoidance of cigarette smoking and exposure to second hand smoke. In addition, individuals who may be exposed to potential risk factors in the workplace should observe recommendations for the use of personal protective equipment and proper handling of possible carcinogens.

**Please visit our website at [www.cancer.mt.gov](http://www.cancer.mt.gov)**

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<sup>3</sup> Report of the Kidney/Bladder Cancers Progress Review Group, National Cancer Institute, 2002.  
<http://planning.cancer.gov/pdfprgreports/2002/kidneyreport.pdf>